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ON CATOCALA PRETIOSA, N. S.

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The species is closely allied to *C. polygama* Guen. Its distinctive features may be more clearly appreciated by a differential comparison with that species. The basal region is conspicuously and broadly shaded with black, deepening toward the anterior transverse line; in *polygama*, shaded with ferruginous. The anterior transverse line is moderately oblique in its general direction, tending to the posterior third of the internal margin, geminate, distinctly separated by white below and slightly above the submedian: in *polygama* the line is quite oblique, tending to, or very near to, the internal angle; preceded below the submedian by gray and ferruginous scales.

The posterior transverse line has the extra-cellular teeth moderate, unequal, the lower one in cell 4 being im prominent; moderately outwardly angulated (not toothed) on the median fold before the sinus; the sinus short, not extending to the middle of the wing, the line narrow with ferruginous and white below it; from the sinus running direct and slightly outwardly oblique to the internal margin, followed by a white line: in *polygama* the two teeth are conspicuous and nearly equal; sharply toothed outwardly on the median fold, as in *cratagi*; sinus long, reaching the middle of the wing, the line broad, with ferruginous on each side and without white below; below the sinus, a long and sharp tooth bordering the internal margin.

The two transverse lines are separated on the submedian nervure by a space equal to the width of cell 2 on the terminal margin, whence they

run parallel to the internal margin: in *polygama*, they are nearly or entirely united on the submedian, beyond which they widely diverge and again wholly or nearly unite on the internal margin.

The reniform is broadly surrounded by white: in *polygama*, narrowly. The sub-reniform is round, its outline defined by black scales; it touches outwardly the median shade line on vein 2; of the two transverse lines, it is nearer to the posterior, or midway between them: in *polygama*, it is subquadrangular, defined by ferruginous scales, is quite removed from the median shade line, and is nearer to the anterior transverse line, sometimes quite approximate to it.

The subterminal line is dark brown: in *polygama*, pale gray. The posterior wings have the marginal band slightly narrowed on the median fold: in *polygama*, it is separated or quite constricted; beneath, the cellular fold is shaded with black (not in *pretiosa*).

In size it is smaller than *polygama*, five examples of which before me measure in expanse of wings, males 1.80, 1.85 and 1.90 inch; females 2 and 2.1 inches. *Pretiosa* males 1.60 and 1.70 inch; females 1.80 inch. The wings are proportionally broader than in *polygama*, they are more clouded with black basally, with more white medially, and with less ferruginous in the terminal region.

Three examples of the species were captured by me at sugar, at Schenectady, N. Y., last year—the two males, in perfect condition, on July 8th and 10th, and the female, somewhat worn, on July 16th.

A fine example of *C. cratægi* Saunders was also taken by me at sugar, on the 17th of July. I had recognized it as an undescribed species at the time of its capture, and had so indicated it in my collection. With the larval state of nearly all of our *Catocalas* unknown, it is very gratifying that Mr. Saunders has been so fortunate as to be able to accompany the description of the imago with that of its larva.

C. polygama was taken but once by me at sugar last season, viz., on the 7th of July, in perfect condition. The examples which I have seen of this species present very little variation. The variability which has been ascribed to it has its existence probably in the confounding with it of *cratægi*, *pretiosa* and perhaps some other species.

NEW SPECIES OF NEBRASKA ACRIDIDÆ.

BY LAWRENCE BRUNER, WEST POINT, NEBRASKA.

Edipoda Nebrascensis, n. s.

Elytra and wings longer than body; elytra spotted; wings blue at base, gradually merging into black.

Female—Vertex broad; middle foveola circular, open in front with a slight median carina; frontal costa rather narrow, somewhat expanded at ocellus; sulcate, expanding at lower extremity. Lateral costa nearly parallel to frontal. Median carina of pronotum crested, as in *Æ. Carolina*, only much higher; cut in front of middle by last transverse incision of pronotum. Posterior part highly arcuate; anterior part nearly straight. Lateral carinae slight, approaching a little in front of middle, where they are cut by two transverse incisions; then running parallel to median carina to base of occiput. Posterior margin of pronotum as in *Æ. Carolina*. Elytra wide, slightly arcuate in front, nearly straight behind; about one-third longer than body. Wings one-eighth of an inch less. Posterior femora a little shorter than body, slightly furrowed below. Antennae about as long as head and thorax.

Color—dried (not alcoholic)—Dirty yellow. Head and pronotum cinereous, with a greenish tinge. Clypeus lurid. Elytra dirty yellow, spotted with brown, the spots on outer half running together, forming irregular narrow transverse bands; median vein brown half its length, bordered by yellow. Spots on inner portion large. Wings bluish at base for about one-fifth their length; outer third yellowish, sprinkled with brown spots at apex. The yellow forms a continuous wide band along the posterior portion and around the inner angle half way to the base. Disk black. Posterior femora crossed on outside by two light brown bands; internally by two black bands. Apex black. Posterior tibiae yellow, with dark spines. Venter yellow. Dorsum blue with a yellow spot on centre of each of the 1-4 segments, remainder brownish. Sides brown, antennae rufous.

Length—♀, 1.75 inches; expanse of wings .4 inches; elytra 1.90 inches; posterior femora .85 inch; posterior tibiae .75 inch; antennae .60 inch.

Habitat—West Point, Nebraska; in August. Male unknown.

Pezotettix gracilis, n. s.

Frontal costa sulcate below the ocellus in ♂; slightly depressed at the ocellus in female. Elytra small. Median carina of pronotum slight, cut by the last transverse incision of pronotum behind the middle, also by the central transverse incision, nearly straight. Lateral carinae distinct, approaching near the centre. Posterior margin of pronotum obtuse in ♀, sulcate in ♂. Elytra short and narrow. Posterior femora as long as abdomen. Male cerci short, rounded, and slightly spatulate, curved inward; lower ends somewhat curved upward and flattened. Female cerci short, thick and pointed.

Color—Varies from a bright green to an olive brown. Face green; cheeks whitish; a broad black stripe from the eye to last transverse incision of pronotum, sometimes to extremity of pronotum. Below this the pronotum is whitish. Disk of pronotum brown. Occiput brownish. Antennae olive green, tips black. Posterior femora pea green, sometimes olive green, with tip black. Posterior tibiae green; base and spines black. Venter white. Dorsum from green to light brown. Male's last segment of abdomen margined posteriorly with black. Sternum greenish white.

Length of ♀, .75 inch.; elytra .13 inch; posterior femora .45 inch. ♂ .62 inch.; elytra .10 inch.; posterior femora .40 inch.

Habitat—Omaha, Nebraska; August to October.

Pezotettix occidentalis, n. s.

Large, stout. Elytra in female half as long as abdomen; in male about two-fifths as long. Male antennae as long as posterior femora.

Vertex not prominent, carinate; foveola wide, slightly elongate. Frontal costa somewhat sulcate in male; plane in female. Eyes large, inflated in male; ordinary in female. Pronotum with sides parallel; margins acute in male, rounded in female. Posterior transverse incision behind the middle; deep in male, ordinary in female. Elytra about two-fifths the length of abdomen, wedge shape. Four anterior femora inflated in male, much curved. Posterior femora passing abdomen one-fifth of their length. Female cerci short and pointed; male cerci large, flat, strong, slightly notched anteriorly, curving inward at extremity, where they are spatulate. Genital plate shape of letter U, large and wide. Entire insect sparsely covered by short hair.

Color—Male dark piceous, variegated with white. Face cinereous; cheeks whitish, occiput piceous with a white stripe from eye along lateral

carinae of pronotum to last transverse incision of pronotum. A wide black stripe on side of pronotum from eye to last transverse incision; below this is a narrow white line bordered below by a narrow black line; remainder dark brown. Eyes posteriorly streaked alternately with black and yellow. Elytra brown, lighter above, unspotted (sometimes a few spots visible). Posterior femora with three white and three black bands; lower inner side and sulcus bright red. Posterior tibiae red, bluish toward base. Spines near base light; remainder black. Venter yellow.

Female differs from male in being of a uniform brown color. Eyes not colored, and bands on sides of pronotum nearly obsolete in some specimens, dim in others. Ovipositor varies from red to yellow, with black tips.

Dimensions—♀ 1.10 inches; elytra .31 inch.; posterior femora .55 inch. ♂ .95 inch.; elytra .25 inch.; posterior femora .51 inch

Habitat—Omaha, Nebraska; August to November.

ON A NEW CANADIAN BOMBYCID MOTH.

BY A. R. GROTE, BUFFALO, N. Y.

Both sexes of a new genus and species referable to the group *Ptilodeutes* are represented in specimens taken by Mr. Geo. Norman (No. 52) at St. Catharines, and for which I propose the name *Ellida gelida*. A male of this species is also in the collection of the Buffalo Society, from New York State. The eyes are naked, ocelli absent, legs rather short and unarmed. The maxillae are moderate; labial palpi short, applied to the front, second article shaggily haired, third distinct. The abdomen is untufted, hardly exceeding secondaries. Male antennae bipectinate, densely setose; female antennae more shortly and finely bipectinate. Head closely applied to the thorax. Anal hairs in the male gathered at each side, projecting slightly, not forming a prominent furcation as in *Coelodasys*. The habitus recalls the Noctuid group Bombyciae. Fore wings 12-veined, 5 intermediate between 4 and 6, cell open; 7 out of 8; 9 out of 8, a short furcation at apex. Hind wings with veins 7 and 8 separate, 7 running very close to 8 for about three-fourths its length from

the base of the wing; 5 weak; cell open; 6 out of 7 beyond, not *before*, a slight projection, on 7, which projection indicates the position of the cross vein. It will thus be seen that the neururation differs sensibly from that of the *Bombyciæ* (*Cymatophoridae* H. S.) The position of vein 5 is different from that in the *Noctuelitæ*; but attention is called here to the fact that in the genus *Nolaphana* (which possesses ocelli) vein 5 is nearly midway between 4 and 6 on primaries.

Ellida gelida is a gray moth, having a superficial resemblance to *Pseudothyatira expultrix*. The collar is discolorous, pale buff, recalling that of *Pygaera pucephala*, edged with black. The wings are long, costa of primaries convex. Interior line represented by three parallel curved black lines, obsolete inferiorly. A black curved streak in a whitish shading on the disc. Outer and subterminal and basal lines faint. Outer line dentate. Between the subterminal shade and the very narrow even continued terminal line at base of fringes, is a distinct line of blackish brown hue, narrowly interrupted on the veins and inferiorly disconnected in the female specimen before me. Hind wings uniform pale fuscous, with whitish fringes. Beneath whitish fuscous, with a line and spot on hind wings. *Expanse* 42 mil.

SYNONYMY OF THE COLEOPTERA OF THE FAUNA BOREALI-AMERICANA, KIRBY.

BY GEO. H. HORN, M.D., PHILADELPHIA, PA.

Since the reprint of Kirby's *Fauna Boreali-Americana* began, much has been learned concerning the species of Coleoptera therein described or mentioned, so that at the present time very few remain unidentified. Through the kindness of the authorities of the British Museum, every facility was granted to Dr. Leconte and myself for the study of Kirby's types, and the results of these studies have already been made known by Dr. Leconte. It will be noticed in very many places that the synonymy here given differs very greatly from that given by Mr. Bethune, who compiled from the best known sources all that was at the time known or guessed concerning Kirby's species.

The present paper is necessarily in great part a compilation, but sufficient new material is presented to render it worthy of appearing as a whole, so that Kirby's species may be at once determined without the necessity of consulting scattered publications.

A few words are necessary to a correct understanding of the paper. The species named by Kirby are in small capitals. Should names in their entirety remain valid, no remarks are made, as in 1, 16, &c. Should the generic name only be changed, the species is quoted as "is a —," as in 25, 28, 37, &c. Should the specific name be changed, the species is quoted as in 3, &c., and the true name is in small capitals also. In some instances, Kirby's species not having been identified, the species have received more recent names and are well known; in this case the latter name (being a synonym) is quoted in italics, as in 58 and 59, so that those having the Kirbyan species under the more recent names may change them.

1. *Cicindela hirticollis* Say.
2. " *repanda* Dej.
3. " *PROTEUS* Kby., is *DUODECIMGUTTATA* Dej.
4. " *OBLIQUATA* Kby. This is a variety of the species previously described by Say under the name *VULGARIS*. Herbst anteriorly named the species *TRANQUEBARICA* with a false locality.
5. " *vulgaris* Say (see above).
6. " *purpurea* Oliv.
7. " *ALBILABRIS* Kby., is *LONGILABRIS* Say.
8. *Casnonia pensylvanica* Dej.
9. *Cymindis MARGINATA* Kby., is *CRIBRICOLLIS* Dej.
10. " *UNICOLOR* Kby. Subsequently described as *hudsonica* Lec.
11. *Sericoda BEMBIDIROIDES* Kby. is a *PLATYNUS*.
12. *Brachinus cyanipennis* Say.
13. *Carabus Vietinghovii* Adams. This species is found in Alaska and extends its habitat toward British Columbia and also toward the Hudson's Bay region. Numerous specimens were collected by the late Robt. Kennicott in Alaska.
14. " *ligatus* Knoch is *VINCTUS* Weber.
15. *Calosoma calidum* Fab.
16. " *FRIGIDUM* Kby.

17. *Helobia* [Nebria] *CASTANIPES* Kby. An immature form of *N. SAHLBERGI* Fisch., described anteriorly to Kirby, from Alaska.
18. *Chlaenius sericeus* Forst.
19. " *IMPUNCTIFRONS* Kby. is *PENSYLVANICUS* Say.
20. " *nemoralis* Say.
21. " *QUADRICOLLIS* Kby. is *TRICOLOR* Dej. *var.*
22. " *CORDICOLLIS* Kby. This species, anteriorly to Dr. Leconte's visit to the British Museum (1869), was erroneously considered to be *chlorophanus* Dej.
23. " *EMARGINATUS* (Kby.) The type of this species could not be found in the British Museum. It is not identical with Say's species, and as the name is pre-occupied, it would be better to drop it entirely from our lists.
24. *Platynus ANGUSTICOLLIS* (Kby.) is not the European species of that name, but our common *SINUATUS* Dej.
25. *Agonum extensicolle* Say is a *PLATYNUS*.
26. " *PICIPENNE* Kby. is probably the species subsequently described as *PLATYNUS luteulentus* Lec. The varieties E and D are distinct and are *Plat. RUFICORNIS* Lec.
27. " *SORDENS* Kby. Has been named in some collections *fuscescens* Chaud.
28. " *melanarium* Dej. is a *PLATYNUS*.
29. " *SEMINITIDUM* Kby. Probably the same as *PLATYNUS chalcus* Lec.
30. " *SIMILE* Kby. In doubt.
31. " *AFFINE* Kby. is *PLATYNUS Harrisii* Lec.
32. " *ERYTHROPUS* Kby. The name is pre-occupied and *PLAT. SUBCORDATUS* Lec. must be used.
33. " *cupripenne* Say. is a *PLATYNUS*.
34. *Calathus gregarius* Say.
35. *Platyderus NITIDUS* Kby. is *PTEROST. ERYTHROPUS* (Dej.)
36. *Argutor BICOLOR* Kby. is *PTEROST. PATRUELI* Dej.
37. " *FEMORALIS* Kby. is a *PTEROSTICHUS*.
38. " *MANDIBULARIS* Kby. is a *PTEROSTICHUS*.
39. " *BREVICORNIS* Kby. Probably the same as *FASTIDIOSUS* Mann. This and the preceding species belong to

the *Cryobius* group of *Pterostichi*, in which the species are very difficult to separate.

40. *Omasseus orinomum* Knoch. is a *PTEROSTICHUS*.
41. " *NIGRITA* Curtis (Kby.) This species is erroneously determined by Kirby and does not appear to differ from *PTEROSTICHUS CAUDICALIS* Say, from specimens in my cabinet from Hudson's Bay region.
42. " *PICICORNIS* Kby. is *PTEROST. MUTUS* Say.
43. *Stereocerus similis* Kby. is *AMARA HAEMATOPUS* (Dej.)
44. *Curtonotus convexiusculus* Steph. (Kby.) Erroneously determined by Kirby; is *AMARA LATICOLLIS* Lec.
45. " *RUFIMANUS* Kby. If the hind angles of the thorax are prominent, as stated by Dr. Leconte (Proc. Acad. 1873, p. 323), this species is rather *LATICOLLIS* than *LACUSTRIS*, as there stated. The species of *AMARA* in this vicinity need a careful revision, when their number will be considerably decreased. No actual comparison of Kirby's and our own types have been made, and any positive expression might mislead.
46. " *BREVILABRIS* Kby. Identical with the preceding species.
47. " *LATIOR* Kby. is *AMARA (Bradytus)*. Described since Kirby as *libera* Lec., *laevistriata* Putz. and *Oregona* Lec. (See Trans. Am. Ent. Soc., 1875, p. 128).
48. *Poecilus lucublandus* Say is a *PTEROSTICHUS*.
49. " *CASTANIPES* Kby. is a variety of 48.
50. " *chalcites* Say is *PTEROSTICHUS SAYI* Brulle.
51. *Amara VULGARIS* Latr. (Kby.) is not that species, but *ERRATICA* Sturm.
52. " *INAEQUALIS* Kby. is *INTERSTITIALIS* Dej.
53. " *impuncticollis* Say.
54. " *PALLIPES* Kby.
55. " *LAEVIPENNIS* Kby. is a smooth *ERRATICA* Sturm.
56. " *DISCORS* Kby. is *CHALCEA* Dej.
57. *Harpalus PLEURITICUS* Kby.
58. " *BASILARIS* Kby. is *obesus* Lec.
59. " *CHROPIUS* Kby. is *desertus* Lec.
60. " *INTERPUNCTATUS* Kby. is probably merely a variety of *ANISODACTYLUS NIGRITA* Dej.
61. " *LONGIOR* Kby. is *longicollis* Lec.

62. Harpalus LATICOLLIS Kby. is ANISODACTYLUS NIGERRIMUS Dej.
63. " carbonarius Say is ANISODAC. CARB.
64. " ROTUNDICOLLIS Kby. is AMPUTATUS Say.
65. " STEPHENSII Kby. is AMPUTATUS Say.
66. Stenolophus VERSICOLOR Kby. is FULIGINOSUS Dej.
67. Trechus TIBIALIS Kby. is BRADYCELLUS TIBIALIS.
68. " AUFICRUS Kby. is BRADYCELLUS COGNATUS (Gyll).
69. " FLAVIPES Kby. is BRADYCELLUS RUPESTRIS Say.
70. " IMMUNIS Kby. is STENOLOPHUS CONJUNCTUS Say.
71. " SIMILIS Kby. is AGONODERUS COMMA Fab.
72. Isopleurus NITIDUS Kby. is AMARA SUBAENEA Lec.
73. Patrobus americanus Dej. is LONGICORNIS Say.
74. Peryphus BIMACULATUS Kby. This species of BEMBIDIUM occurs also in Colorado.
75. " SORDIDUS Kby. Immature specimen of the preceding.
76. " SCOPULINUS Kby. is BEMB. *gelidum* Lec.
77. " RUPICOLA Kby. is BEMB. RUPESTRE Fab.
78. " CONCOLOR Kby. is BEMB. *salebratum* Lec.
79. " PICIPES Kby. The type of this is in very bad condition.
Uncertain.
80. " quadrimaculatus Linn. is a BEMBIDIUM.
81. " NITIDUS Kby. is a BEMBIDIDM.
82. Tachyta PICIPES Kby. is TACHYS NANUS Gyll.
83. Notaphus NIGRIPES Kby. A BEMBIDIUM which occurs also in Oregon and British Columbia.
84. " INTERMEDIUS Kby. is probably BEMBIDIUM *rapidum* Lec.
85. " VARIEGATUS Kby. The specific name is pre-occupied.
It is now known as BEMBID. PICTUM Lec.
86. Bembidium impressum Gyll.
87. OPISTHIUS RICHARDSONII Kby. Occurs in British Columbia, Oregon, Northern California, and Colorado.
88. Elaphrus CLAIRVILLII Kby. for a long time called *politus* Lec.
89. " INTERMEDIUS Kby. This species forms one of the varieties of that known in our collections as *Californicus* Mann. I cannot see any difference between this and the European RIPARIUS.
90. " OBSCURIOR Kby. is probably a small *obliteratus* Mann.
91. Notiophilus aquaticus Linn. (Kby.) is SEMISTRIATUS Say.

(To be Continued.)

ON JACOB HÜBNER AND HIS WORKS ON THE BUTTERFLIES
AND MOTHS.

BY A. R. GROTE,

Director of the Museum, Buffalo Society Natural Sciences.

For a long time that school of Entomologists which has for its basis the view that there are but few genera in the Butterflies and Moths, and that the more minute characters which these insects offer are not of sufficient value to support genera, have held an almost undisputed sway in the scientific literature on the subject. The first opponent of these views was Jacob Hübner, whose works form the subject of the present paper. A single author, in the comparatively obscure town of Augsburg, in Germany, Jacob Hübner found no adherents to his views, and his works fell into obscurity. The Viennese Entomologists misapplied many of the few generic names of Hübner they adopted, and abused him. Their example was followed by the French Entomologists, including the abuse. In England Hübner's ideas found a more favorable reception from Stephens in 1829, and here and there, in Germany itself, a sort of half recognition has been extended to Hübner from time to time, in some few cases and under some limitations.

So far as Hübner's works are concerned, they must be studied from two separate aspects. First as to Hübner's fundamental idea that the Butterflies and Moths offer many genera, independent of the question as to whether the names Hübner proposed in consequence for these genera, be reinstated in modern systems of classification or not.

And here the question arises respecting the value of all systems of classification and as to their purport. And we shall be agreed that while our conceptions of genera and species and other divisions are abstract, the purpose of our system of nomenclature is to express briefly inter-relationship among animals, no less than to distinguish them. Under the view that dissimilar structures are allowed to be embraced under the same generic name, our systems become clearly defective to this extent. And as the question of to-day is the origin of the different kinds of animals, we are clearly on the right path if we seek to define our genera with more precision and to associate only those species under one genus which agree in minuter points of structure. Just this sort of nearer and more critical comparison is what we now evidently need in order

to discuss the question of geographical distribution to any purpose or advantage and to arrive at some nearer comprehension of the way in which species may have differentiated. And it seems reasonable that we should express the results of such comparison in our nomenclature. Not expressing them, their record tends to become obliterated. So that in this direction we find that Jacob Hübner in his work is more nearly up to the requirements of to-day than are his critics. And it is only this serious study of Entomology that relieves the whole subject from the charge of childishness which we hear not unfrequently made against it, and which we cannot well otherwise refute. To merely catalogue species of insects is to bring the study of Entomology down to the level of an arrangement of curiosities of any description. It needs some higher spirit to elevate it and to relieve it from the imputation of uselessness.

The second question with regard to Hübner and his works is whether we are to recognize the right of his generic names, proposed so long ago, to be used now for one or more of the species he included under them. It is a question which must be answered in the affirmative under the law of priority, since Hübner is post-Linnean, and wrote on genera from 1806 to 1828.

But it is a question which is confused by technical objections against the form and style of Hübner's generic definitions. Hübner has published two works which we shall here consider (omitting the question as to "Franck's Catalogue" for the time), viz., the *Tentamen* and the *Verzeichniss*. The first is a single leaf and contains a sketch of a system of classification in which a number of generic names are proposed and defined by the enumeration of a single known and named species under each. The second is an attempt to classify all the known *Lepidoptera* of the world under genera very briefly and superficially described.

To the acceptance of these works and the adoption of the generic names therein contained, comes now Mr. W. H. Edwards in the pages of the *CANADIAN ENTOMOLOGIST* in opposition, and brings with him Dr. Hagen as an ally and one upon whom he depends as full of a knowledge of the literature on the subject. The attack in the March number is mainly on the *Tentamen*, and we will see what it consists in.

There is mainly brought forward, not without ingenuity, the plea that Hübner never intended that the *Tentamen* should be adopted. The argument is sustained in two ways. First by the language of the *Tentamen*; second by the statement that it was not known to contemporary writers on its subject.

As to the first, Hübner's language is that he submits his Tentamen to skilled persons to be examined and pronounced upon. And this sort of language cannot be fairly tortured to mean anything more than that the work was experimental and tentative rather than absolute and final. What otherwise is all work on this subject? Skilled persons will use of any work what seems to them best and useful, without regard to the opinion of the author on his own work. That Hübner's attitude was modest does not authorize us to ignore him, and should rather urge us to examine with the more care what he has written.

The true criticism of the statement that the Tentamen was not known to writers of Hübner's time is more difficult to give, nevertheless we will attempt it. And first we will examine what Mr. W. H. Edwards, seconded by Dr. Hagen, has to say on the subject. We quote from pp. 44 and 45 of the CAN. ENT. their argument as follows:

Ochsenheimer, Schmett. Eur. iv, 1816, says: "Hubner has under the title Tentamen, &c., published on a quarto sheet a sketch of a system of Lepidoptera, in which to the divisions adopted by him are given generic names of unequal value. Hubner seems to be aware of this himself, for he says in concluding, 'let no one suppose that this arrangement will require no farther correction.' *This sheet I save only long after the printing of my 3rd Vol. was done.*" This was then after 1816, as Ochsenheimer's 3rd Vol. bears date that year. Mr. Scudder has inadvertently copied this as 1st Vol., 1807, instead of 3rd Vol., 1816. So as Dr. Hagen, in a note, says, "the Tentamen was not known to the chief Lepidopterologist of his day for ten years or more after it was printed, though he was in intimate communication with Hubner, and that he did not know it shows clearly that Hubner did not think it of importance enough to be communicated to him."

Now we claim that it is a mistaken criticism of the facts to implicate Ochsenheimer as a party to the ignoring of the Tentamen, and that the onus of this procedure falls on Treitschke, his narrower disciple, and on Boisduval, who wrote of "mon genre" at Hübner's expense. And to do this we have to correct Mr. Edwards' dates. The 3rd Volume of Ochsenheimer bears date 1810, instead of 1816. So that, the Tentamen being issued in 1806, Dr. Hagen's *ten years* is reduced at once to four.

We may admire Dr. Hagen's talent for argument, but it is wide of bringing a true conclusion. The times were not favorable to a rapid interchange of publications, and although this consideration may be insufficient, it is not without its force applied to the four years of 1806—1810. But in order to accept Dr. Hagen's conclusion we have to believe that a man deliberately prints a new system of classification "for the purpose of submitting it" to his fellow naturalists and then inexplicably

"considers it of no importance." That Hübner *did* consider it of importance is shown by his having built the later Verzeichniss upon it. We shall find by careful study that Hübner was a most consistent Entomologist, and the criticism which pronounces him as vacillatory to be worthless. So much is to be plainly gathered from his works themselves.

And, after all, after four years' time Ochsenheimer *does* get the Tentamen, and in his fourth volume, 1816, speaks of it in a manner which shows a desire to adopt what he could of it. His language is both friendly and appreciative, and in his list he quotes it in the synonymy and therein adopts certain of the genera on the authority of the Tentamen, as "*Cosmia*," "*Xylena*," "*Agrotis*," "*Graphiphora*," etc. On the whole he adopts more than he rejects, and where he rejects we are given no reason for the discrimination (e. g. *Heliophila*). But now we can see the value of Mr. W. H. Edwards as a critic. He makes Ochsenheimer to say: "*This sheet I saw only long after the printing of my 3rd Vol., was done,*" and comes to a full stop. *But Ochsenheimer comes to no full stop!* No, he goes on, after a comma, *therefore I could not earlier have adopted anything out of it.** So that Ochsenheimer *apologises* for an unavoidable neglect and in his fourth volume does Hübner a tardy but not altogether inadequate justice. For the names above cited, and others afterwards credited by Ochsenheimer's followers to himself, *are* taken by Ochsenheimer from the Tentamen and credited to Hübner by Ochsenheimer himself. And the criticism that pronounces Ochsenheimer the chief Lepidopterologist of his day we cannot accept. Ochsenheimer was, at best, provincial, and from the nature of his work could not be otherwise. He is not to be compared to Hubner for grasp of his subject. His follower, Treitschke, is still narrower and on him and the school to which he belonged falls the blame for having appropriated, misapplied and ignored the work of Hubner.

A final argument of Dr. Hagen's, that the booksellers of the time did not advertise the Tentamen, may be dismissed with the remark that it certainly was published as proved by Ochsenheimer in 1810, and the question, whether the failure to catalogue a work by a bookseller is sufficient to cancel its publication?

I conclude that if we wish to follow Ochsenheimer we must adopt the Tentamen. I draw attention to the fact that Ochsenheimer's genera

* daher Konnte ich fruher nichts davon aufnehmen, 4, viii.

in the 3rd Volume are equally without diagnosis, and yet have been accepted. It is right here that the struggle has come in between the Hubnerian and Treitschkean ideas as to generic characters in the Lepidoptera. For the time the latter have obtained, and the former have been rejected. But now Hubner's ideas are prevailing, and with them his names will be reinstated in their undoubted right—a right which should not be questioned, for the followers of Treitschke are convicted both of appropriating Hubner's names, and endeavoring to implicate Ochsenheimer after his death in the transaction.

TINEINA.

BY V. T. CHAMBERS, COVINGTON, KENTUCKY.

LAVERNA.

L. ? (Anybia ?) gleditschiæella. N. sp.

The form of the palpi is that of *Anybia langiella* St., as represented *Ins. Brit.*, v. 3, but the wings are a little longer than those of *langiella* are there represented, though the hinder pair have the same form. The venation of the fore wings is that of *L. epilobiella* (*fig'd loc. cit.*) except that the apical vein is obsolete in the single specimen examined by me; that of the hind wings also resembles that of *epilobiella*; indeed, if the dorsal and submedian veins were represented in the figure of *epilobiella*, and the sub-apical or discal branch was produced forwards into the cell, the venation would be that of this species. All of the wing veins, except the furcate apical branch of the fore wings, are unusually distinct in this species.

In *Laverna*, however, the species are usually rather coarsely scaled and the wings are usually ornamented with tufts of raised scales, whilst this species is remarkable for the fineness of its scales and its perfect smoothness. But the genus *Laverna* is almost as indefinite as *Gelechia* itself. So far as ornamentation is concerned, this species might be placed in *Asytina*.

In repose *gleditschiælla* sits very flat upon the surface on which it rests. The ♀ has the last joint of the abdomen long and conical, and the antennae do not quite reach to its apex, while in the ♂ they exactly reach it. The basal joint of the antennae is rather elongate and suddenly clavate, and the stalk is slender and smooth. It seems to walk badly and probably is nocturnal in its habits. It dodges rather clumsily about among the thorns of *Gleditschia triacanthos*, or from a hiding place under one piece of the scaly bark to another, and the larva mines the thorns of the *Gleditschia*.

My attention was first attracted to it by observing numerous empty pupa cases projecting from the large thorns, sometimes two or three from a single thorn, in the latter part of May. As *Gelechia (Helice) palidochrella* Chamb. was swarming around the trunks of the *Gleditschia* trees at the same time, I had little doubt that it was the thorn burrower; however, to make it certain, I gathered some of the thorns, and from them, to my surprise, bred a single specimen of *gleditschiælla*, a "micro" that I had never before seen, though I had captured multitudes of "micros" from the trunks of the same trees. Since then I have taken several specimens by frightening them from their hiding places among the bunches of thorns. I am, however, fully convinced that *palidochrella* also feeds in some way on *Gleditschia*, and I think that *Philonome Staintonella* Chamb. most probably does also, and likewise *Semele bifasciella* Chamb. If the latter does not feed on *Gleditschia*, it probably does on Elm.

L. gleditschiælla is dark glossy bronzy brown, tinged also with green in ordinary lights, appearing when the light falls on it golden bronze, in other lights showing purple or even bluish reflections. The anal tuft and rather elongate hairs of the posterior tibiae fulvous in the ♂, but darker in the ♀. *Al. ex.* $\frac{1}{2}$ inch. Kentucky.

An old or worn specimen is a very plain and unattractive insect, but a perfectly fresh specimen is a very fine and handsome one, notwithstanding that it is so nearly unicolorous; its perfect smoothness and gloss, fine scales, elongate wings and ciliae, and rich greenish brown, bronze and purple hues with the changes of light, make it a very handsome species.

The thorns of the *Gleditschia*, after being hollowed out by this larva, are frequently occupied by a small species of Ant.

When the account of this species was first prepared the larva was unknown, and until this spring (1876) I have had no opportunity of investigating its habits. I have found the larvæ of two species feeding

upon the pith inside the thorns of *G. triacanthos*; the one first described below I am satisfied is the larva of this species; what the other is I do not attempt to guess, but I append a description of it because of its singular structure.

That which I believe to be the larva of *Gleditschiælla* is about three lines long, rather fat and sluggish, yellowish white, with the head and a line which is interrupted in the middle, across the first segment after the head, just behind its anterior margin, ferruginous. Feet, sixteen. The pupa is not enclosed in a cocoon. I have found a few larvæ and several fresh pupæ in the latter part of April.

The other larva is white, about four lines long, cylindrical, with the segments distinct and clothed with scattered white hairs. The thoracic legs are very distinctly divided into segments, *have no terminal claw*, each segment being surrounded near its apex with a circle of rather stiff ciliæ; the anal feet are small and indistinct, and *there are no ventral prolegs*; but *there are six pairs of dorsal prolegs or large tubercles* which represent them; these "dorsal prolegs," if I may so call them, are as large and distinct as the true legs; they have no terminal claw, nor any coronet of tentacles, as in ordinary ventral prolegs, but each one is bifid at its tip, or to speak perhaps as correctly, each one ends in two small tubercles, and *progression is mainly effected by these false legs*. In crawling the thoracic and anal feet rest upon one surface, while the dorsal or false feet rest upon the opposite one, the body being curved so as to accomplish this purpose.

The larvæ of *Gleditschiælla* were found in living thorns, or those which had not been long dead; and a single larva evidently eats but little of the pith. The larvæ with the dorsal legs were found at the same time in dead thorns, which had previously been burrowed by the larvæ of *Gleditschiælla*, and in which was the small hole through which the imago of that species had emerged the previous year. No other means of ingress or egress was observed besides this hole, and this singular larva could not now pass through this hole. It was feeding on the dead pith. Small white silken cocoons, between three and four lines long, were found in some thorns; most of them were a year or more old, and were empty, but one of them contained a pupa which unfortunately was destroyed in opening the thorn. Several dead larvæ were also found, but they were so completely encased in multitudes of little Chalcid pupæ that it was impossible to determine the larvæ. A little Chalcid larva was just emerging from one of the larvæ of *Gleditschiælla*.

L. ænothæræmenella. *N. sp.*

Antennae white; the basal joint of the outer surface of the second joint of the palpi, an annulus before the middle of the third joint, and its tip, brown (the third joint sometimes entirely brown). Head white. Fore wings sordid whitish, dusted and overlaid with pale fuscous, with four short longitudinal black lines along the middle of the wing, the first of which is on the fold before the basal fourth; the second is about the middle; the third is about the apical fourth, and the fourth is at the apex. These lines are made of raised scales. There are also two blackish raised tufts, one of which is just before the dorsal ciliae, and the other is a little further back. Hind wings fuscous. The first pair of legs is brown on the anterior surface and whitish behind, second and third pair whitish marked externally with brown. The black lines along the middle of the wing remind one somewhat of similar lines in the European *L. phragmitella*, and *L. cephalonhiella* Chamb. has similar lines. This species, however, is quite distinct from both. *Al. ex.* $\frac{1}{16}$ to $\frac{1}{8}$ inch. Sent to me by Miss Murtfeldt, from St. Louis.

(To be Continued.)

ENTOMOLOGICAL CLUB OF THE A. A. A. S.

We desire to call the attention of entomologists of the U. S. and Canada to the fact that the Entomological Club of the American Association for the Advancement of Science will meet at Buffalo, N. Y., on the 22nd of August, in some room that will be provided by the local committee of the Association. All interested in the subject of Entomology are invited to attend, and to repair at first to the Tift House for instructions.

J. L. LECONTE, Pres.

C. V. RILEY, Sec.

In view of the fact that questions of great importance relating to the present and future well-being of Entomology are likely to be discussed at the forthcoming meeting of the Entomological Club, we trust that all the "brethren of the net" who can possibly attend from Canada, as well as the U. S., will endeavor to be present.—ED. C. E.

BOOK NOTICES.

United States Geological Survey of the Territories, Vol. x. Monograph of the Geometrid Moths, by A. S. Packard.

Through the kind recommendation of Dr. Packard, we have been favored with a copy of the above work from the "Department of the Interior," at Washington. It is a quarto volume of over 600 pages, with 13 beautiful plates, 6 of which are devoted to delineations of the wing structure of the different families, 1 to the various forms of thorax, &c., and 6 to representations of the insects in their larval and perfect forms. Some idea of the work on these beautiful plates may be formed when it is stated that these latter six plates contain figures of 377 species of Geometrid Moths, besides 66 figures of the larvæ and chrysalids.

The plates illustrating the venation and external anatomy have been drawn by Mr. S. E. Cassino and Dr. Packard—the moths by Mr. L. Trouvelot, of Cambridge, Mass. They are all well executed, but Mr. Trouvelot's work is especially worthy of praise. The many and minute points of difference between the various species are faithfully given, so that the student, with the help of the excellent written descriptions in the text by Dr. Packard, will have little difficulty in determining the species in his possession.

This work is a most valuable contribution to our Entomological literature, bringing together all that is known up to the present time in relation to the Geometrids inhabiting this country north of the southern boundary of the United States, including British America, Arctic America and Greenland. It will give a great stimulus to the further study of this most interesting family of moths. The careful work of years of patient labor and research is evident throughout its pages, and we sincerely hope that its talented author may be spared many years to continue the work thus so well and thoroughly begun. This volume is beautifully got up—the paper and typography excellent, reflecting great credit on the department from whence it is issued, and on the United States government for their enlightened and liberal policy in thus placing in the hands of the scientific student, as well as that of the general public, the material accumulated by the untiring industry of the busy workers of the past, and diffusing a knowledge throughout the country in reference to these matters which could not otherwise have been accessible.

* We tender our cordial thanks to Dr. Packard for his kind remembrance of us.

Eighth Annual Report of the Noxious, Beneficial and other Insects of the State of Missouri, by C. V. Riley, State Entomologist.

We are much indebted to Mr. Riley for a copy of this valuable work. It is got up in the usual excellent style of these Reports, 8vo., 190 p., illustrated with fifty-five excellent wood engravings.

The Report opens with some notes on the Colorado Potato Beetle, followed by articles on Canker Worms, the Army Worm, the Rocky Mountain Locust, the Grape Phylloxera and the Yucca Borer. These articles abound with practical information and suggestions, making the work a very valuable one to the intelligent agriculturist as well as to the entomological student. It would be difficult to estimate the immense good which these eight reports have accomplished, diffusing practical information of the greatest value to the farmer and fruit grower, as well as settling many scientific points of much interest to entomologists. The State of Missouri deserves great credit for her enlightened liberality in supplying the means to enable Mr. Riley to devote himself entirely to this good work, and we believe it will abundantly repay its cost to the State itself in a material way by the saving of grain and fruits from insect destruction, while at the same time it disseminates a knowledge on the subjects treated of over the entire length and breadth of the land.

On Some Insect Deformities, by Dr. H. A. Hagen. *Memoirs of the Museum of Comparative Zoology at Harvard College, Cambridge, Mass.*, 4to 24 p., with one lithograph plate.

Through the kindness of Prof. Agassiz and Dr. Hagen, we have received a copy of the above interesting paper, in which the following subjects are treated of: Perfect Insects with the Larval Head, and Precocious Development of the Caterpillar.

Synonymic List of the Butterflies of America, North of Mexico, by Samuel H. Scudder, Cambridge, Mass., from the *Bull. Buf. Soc. Nat. Sci.*, 8vo., 32 pp.

Fossil Foraminifera of Sumatra, by Henry B. Brady, F.R.S., F.L.S., &c., 8vo., 8 pp., with two excellent lithographic plates. From the *Geological Magazine*, London, Eng.

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